10th NUCLEONICA Training Course, Cesme, Turkey, 8-10th Oct. 2008

NUCLEONICA Overview: A WEB PORTAL FOR THE NUCLEAR SCIENCES

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nucleonica

Nucleonica…

Institute for Transuranium Elements

nucleonica … web driven nuclear science

Sunday, November 18, 2007

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Nucleonica - web driven nuclear science

NUCLEONICA is a new nuclear science web portal from the European Commission's Joint Research Centre. The portal provides a customisable, integrated environment and collaboration platform for the nuclear sciences using the latest internet "Web 2.0" dynamic technology.

NUCLEONICA is aimed at professionals, academics and students working with radionuclides in fields as diverse as the life sciences (e.g. biology, medicine, agriculture), the earth sciences (geology, meteorology, environmental science) and the more traditional disciplines such as nuclear power, health physics and radiation protection, nuclear and radiochemistry, and astrophysics. It is also used as a knowledge management tool to preserve nuclear knowledge built up over many decades by creating modern web-based versions of so-called legacy computer codes.

NUCLEONICA provides "software as a service" on the web rather than through installed software, adding a greater level of stability and security and avoiding version compatibility and update problems. In addition, all **NUCLEONICA's** web applications are browser and operating system independent and can therefore be accessed by most web browsers.

NUCLEONICA offers the following main features:

» **Data Centre:** Online interactive nuclide charts. Reference data and searchable databases for internationally evaluated nuclear data. Library creation software

NUCLEONICA HOT TOPICS

» Open Call for JRC Traineeships

November 14, 2007

ITU's first open call for JRC-Traineeships has been published on our website. The deadline for applications is 6 December 2007 (midnight). In particular we have a position for assistance in the development of an electronic version of the Karlsruhe

JRC EUROPEAN COMMISSION

Institute for Transuranium Elements

NUCLEAR NEWS

French FM: France is not ruling out a military strike on Iran

NOV 18 Even though in Tehran the IAEA's report was described as a "political victory" that may prevent the intensifying of international sanctions, Kouchner says that "for now Iran persists in not meeting it […]

Iran: UNSC interference illegal

NOV 18 Mohammad Saeedi, a senior Iranian nuclear official has said insistence on pursuing Iran's nuclear program at the Security Council lacks legal grounds, PressTV reported. […]

Iran says ready to act if attacked …

NOV 18 LONDON, November 18 (IranMania) - Hardline Iranian President Mahmoud Ahmadinejad said Iran was ready to respond if attacked, but played down the prospect of war with the United States, Reuters reporte […]

'Safe' uranium that left a town contaminated

NOV 18 It is 50 years since Tony Ciarfello and his friends used the yard of a depleted uranium weapons factory as their playground in Colonie, a suburb of Albany in upstate New York state. "There wasn't no f […]

Chavez dealing pain to Spain

NOV 18 Chavez, who has nationalised large parts of the economy this year under his self-styled socialist "revolution", said last week he will revise diplomatic and business ties with the

Registration as a NUCLEONICA user

The entire registration process involves three steps: Registration, Change Login and Password, and Activate your Profile. To register with Nucleonica, please proceed as follows:

Registration

- Go to the Nucleonica Homepage at www.nucleonica.net
- In the left hand window panel, click on Free Access and Register as a Nucleonica User.
- Read the end user's license agreement. Tick the checkbox to agree to the terms of the license agreement.
- Fill out your details on the form and enter the automatically generated code.
- Submit the form by pressing the "Register" button.

Change Login and Password

Shortly thereafter, you will receive an email with login and password. The login is the email address you specified in the registration process. The password is an automatically generated combination of letters and numbers. Both of these can be changed in Edit Preferences after logging in to Nucleonica for the first time.

Activate your Profile

Finally, to activate your profile, click on My Profile in the Start page. Tick the check boxes for the information fields to be visible to other users. Upload a photo in JPG or GIF format. For further information see:

http://www.nucleonica.net:81/wiki/index.php/Help:Register_as a_Nucleonica_User

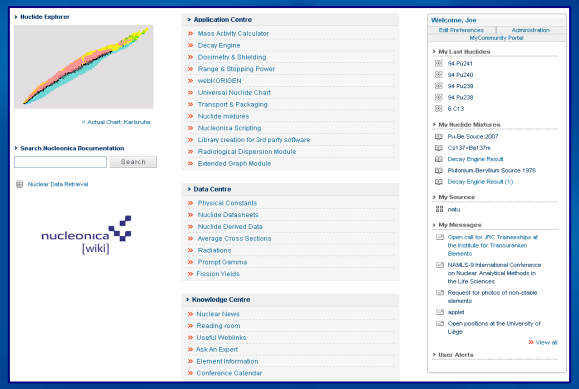
nucleonica

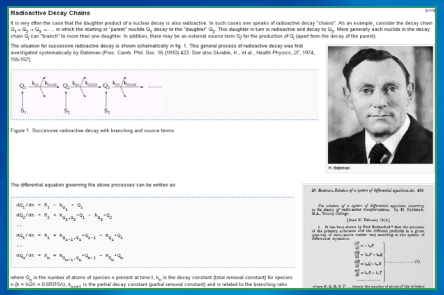
Nuclear Science Data & Applications

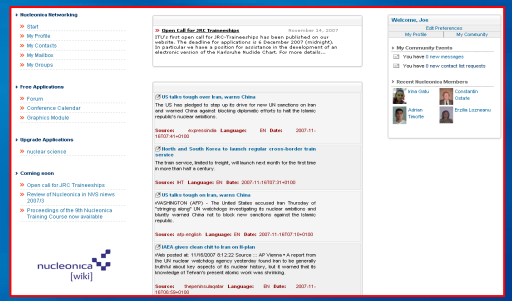
Nucleonica Wiki (CMS)

Networking with Nucleonica

Training Courses

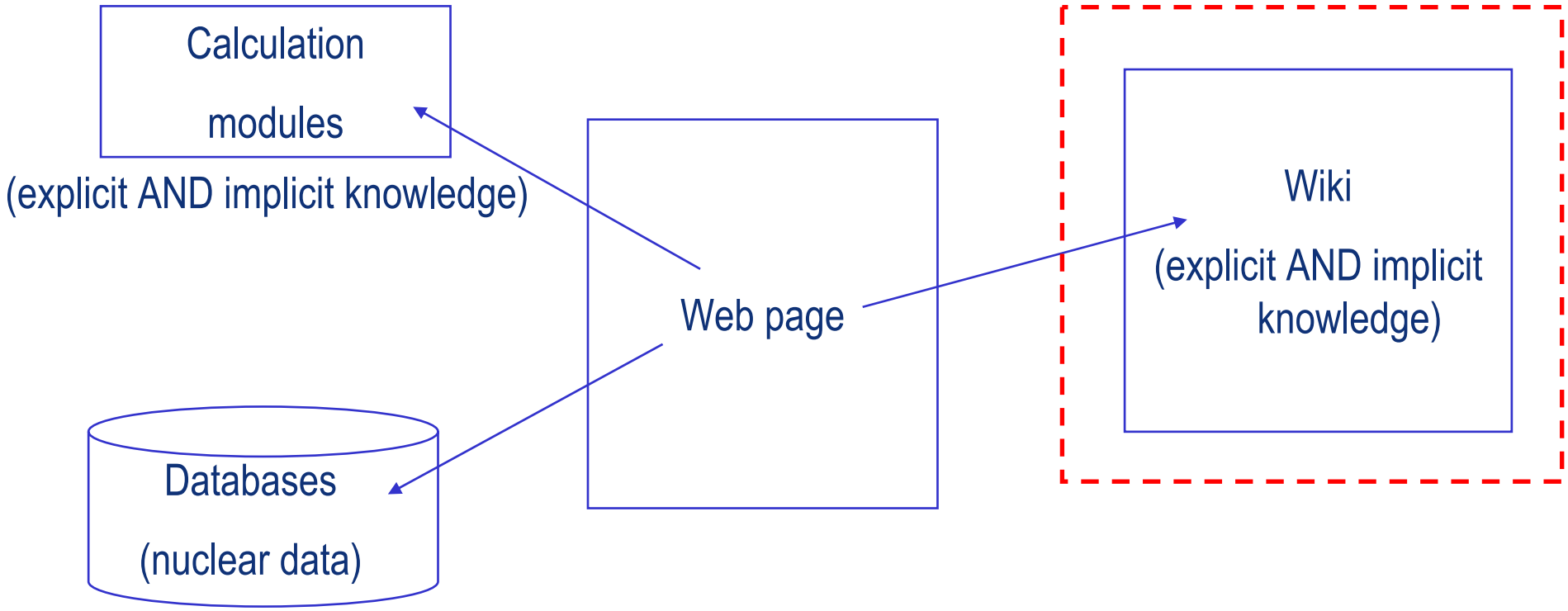






nucleonica

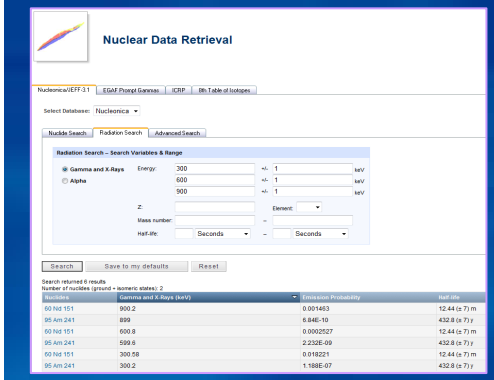
Nucleonica Architecture & Logical Structure…

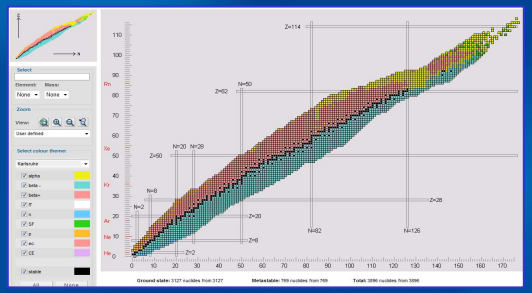


The NUCLEONICA Structure

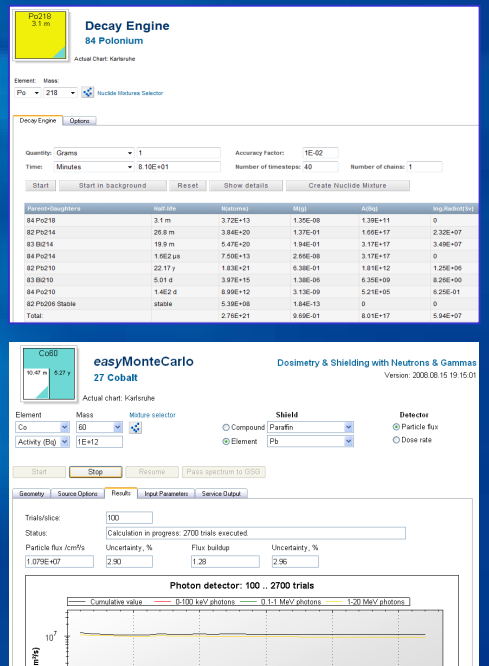
Nuclear science portal …

Data centre…

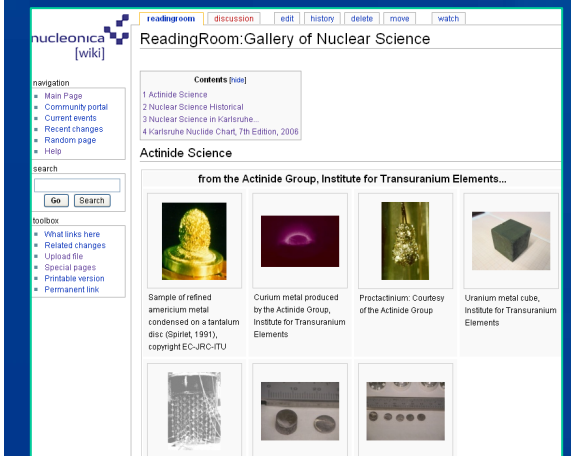




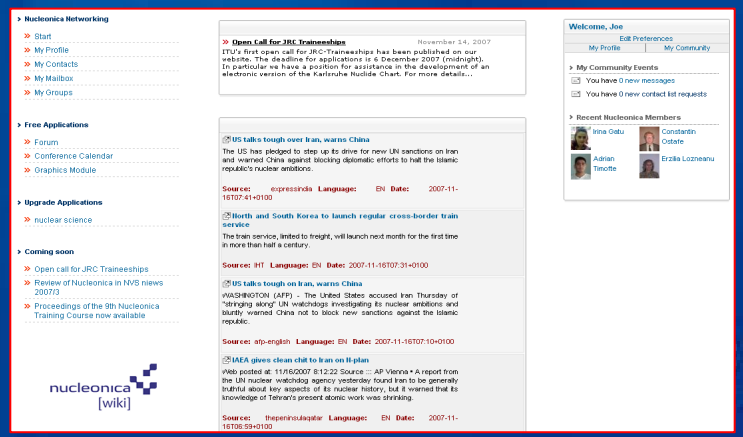
Applications centre…



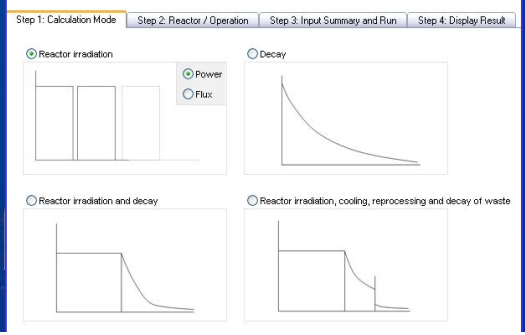
Knowledge centre…



Networking centre…



webKORIGEN

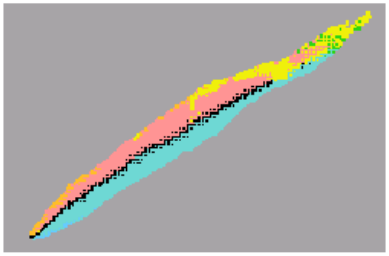


Nuclear science applications…

nucleonica … web driven nuclear science

Applications | My Preferences | Help

Nuclide Explorer



» Actual Chart: Karlsruhe

Search Nucleonica Documentation

Search

Nuclear Data Retrieval

nucleonica [wiki]

Application Centre

- Mass Activity Calculator
- Decay Engine
- Dosimetry & Shielding
- Range & Stopping Power
- webKORIGEN
- Universal Nuclide Chart
- Transport & Packaging
- Nuclide mixtures
- Nucleonica Scripting
- Library creation for 3rd party software
- Radiological Dispersion Module
- Gamma Spectrum Generator (IE only)
- easy Monte Carlo (IE only)
- Extended Graph Module

Data Centre

- Physical Constants
- Nuclide Datasheets
- Nuclide Derived Data
- Average Cross Sections
- Radiations
- Prompt Gamma
- Fission Yields

Knowledge Centre

- Nuclear News
- Reading room
- Useful Weblinks
- Ask An Expert

Welcome, Joe

Edit Preferences | Administration

MyCommunity Portal

My Last Nuclides

- 63 Eu152
- 84 Po210
- 27 Co60
- 37 Rb98
- 37 Rb88

My Nuclide Mixtures

- Natural Thorium
- Natural Uranium
- U232+Co60
- Cs137 + Ba137m
- Depleted Uranium (0.4%U235)

My Sources

- Pu239 1 g
- natu

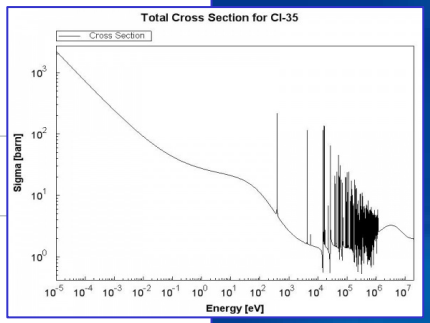
My Messages

No messages for you at the moment

User Alerts

No alerts at the moment

Nuclear Data Retrieval



Nucleonica/JEFF-3.1 | EGAF Prompt Gammas | ICRP | 8th Table of Isotopes

Select Database: Nucleonica

Nuclide Search | Radiation Search | Advanced Search

Radiation Search – Search Variables & Range

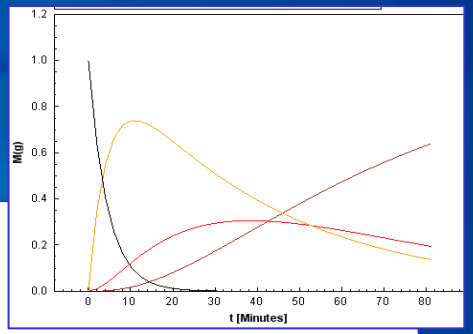
Gamma and X-Rays / Alpha

Energy:	300	+/-	1	keV
	600	+/-	1	keV
	900	+/-	1	keV
Z:		Element:		
Mass number:		–		
Half-life:	Seconds	–	Seconds	

Search | Save to my defaults | Reset

Search returned 6 results
Number of nuclides (ground + isomeric states): 2

Nuclides	Gamma and X-Rays (keV)	Emission Probability	Half-life
60 Nd 151	900.2	0.001463	12.44 (± 7) m
95 Am 241	899	6.84E-10	432.8 (± 7) y
60 Nd 151	600.8	0.0002527	12.44 (± 7) m
95 Am 241	599.6	2.232E-09	432.8 (± 7) y
60 Nd 151	300.58	0.018221	12.44 (± 7) m
95 Am 241	300.2	1.188E-07	432.8 (± 7) y



Decay Engine

Po218 3.1 m

84 Polonium

Actual Chart: Karlsruhe

Element: Po Mass: 218 Nuclide Mixtures Selector

Decay Engine | Options

Quantity: Grams 1 Accuracy Factor: 1E-02

Time: Minutes 8.10E+01 Number of timesteps: 40 Number of chains: 1

Start | Start in background | Reset | Show details | Create Nuclide Mixture

Parent+Daughters	Half-life	N(atoms)	M(g)	A(Bq)	Ing.Radiot(Sv)
84 Po218	3.1 m	3.72E+13	1.35E-08	1.39E+11	0
82 Pb214	26.8 m	3.84E+20	1.37E-01	1.66E+17	2.32E+07
83 Bi214	19.9 m	5.47E+20	1.94E-01	3.17E+17	3.49E+07
84 Po214	1.6E2 µs	7.50E+13	2.66E-08	3.17E+17	0
82 Pb210	22.17 y	1.83E+21	6.38E-01	1.81E+12	1.25E+06
83 Bi210	5.01 d	3.97E+15	1.38E-06	6.35E+09	8.26E+00
84 Po210	1.4E2 d	8.99E+12	3.13E-09	5.21E+05	6.25E-01
82 Pb206 Stable	stable	5.39E+08	1.84E-13	0	0
Total:		2.76E+21	9.69E-01	8.01E+17	5.94E+07

Dosimetry and Shielding

Co60 10.47 m 5.27 y

27 Cobalt

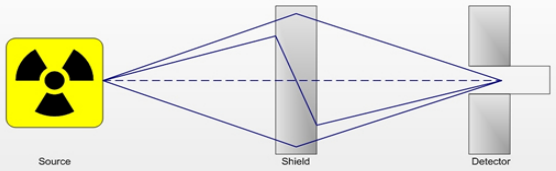
Actual Chart: Karlsruhe

Element: Co Mass: 60 Nuclide Mixtures Selector

Dosimetry and Shielding | Options

Source strength **Shielding material** **Dose rate (µSv/h)**

Activity(Bq) 1E+06 Pb 10 cm



Source/detector distance (cm)

100

Start | Reset

Half-Value Shield Thickness(cm)	1.88E+00
Tenth-Value Shield Thickness(cm)	4.90E+00

nucleonica

Community Members | Pending Contacts

all Users

my Contacts

Image	Name	Organization
	MARTINA ADORNI	University of Pisa - DIMNP - GRNSPG
	Aleksandra Schwenk-Ferrero	Forschungszentrum Karlsruhe - Institute for
	Mikael Andersson	Westinghouse Electric Sweden AB
	Martin Badertscher	
	Remigiusz Baranczyk	European Commission DG TREN
	Enrico Barbina	Nabla Progetti Srl
	Valerio Barbina	Nabla Progetti Srl
	Bjoern Becker	Forschungszentrum Karlsruhe GmbH, Institu
	Fabio Belloni	European Commission, DG-JRC, Institute fo
	Andrey Berlizov	Institute for Transuranium Elements, EC JRC
	Yuri Bilodid	Forschungszentrum Dresden-Rossendorf
	Emilie BOSSE	CEA
	Berkan Cetinkaya	Ege University, Institute of Nuclear Sciences
	Vanessa Chisté	
	Catalina Chitu	

Profile | Contacts

Simon Jerome National Physical Laboratory

Send message
Add to Your Contact List

Name	Simon Jerome
Location	United Kingdom
Nationality	British
Organization	National Physical Laboratory
Job Title	Head of Radiochemistry
Areas Of Interest	Radiochemistry; Analytical Chemistry; Radiochemical Analysis; Low-level radioactivity measurement; Inter-laboratory comparisons and proficiency testing; ISO 17025:2005 Technical Assessor; ISO Guide 43
E-Mail	simon.jerome@npl.co.uk

Organization	Loughborough University
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Job Title	Lecturer in Radiochemistry
Areas Of Interest	Migration of radionuclides in the environment Effect of orgaincs, natural and anthroprogenic, on radionuclide transport
Latest Publications	Muhammad Haleem Khan, Peter Warwick and Nick Evans, Spectrophotometric Determination of Uranium with Arsenazo-III in Perchloric Acid, Chemosphere, 63, 2006, p 1165 Peter Warwick, Nick Evans and Sarah Vines, Studies on some divalent Metal a-Isosaccharinic Acid Complexes, Radiochimica Acta, 94(6-7), 2006, pp 363-369. S. Aldridge, P. Warwick, N. Evans and S. Vines., Degradation of tetraphenylphosphonium bromide at high pH and its effect on radionuclide solubility, Chemosphere, 66(4), 2007, pp

October 2007 Karlsruhe

[edit]

9th Nuclear Science Training Course with Nucleonica, 25/26th Oct. 2007, Ostendorfhaus, Karlsruhe

The 9th Nuclear Science training course on Radioactivity, Radionuclides and Radiation with Nucleonica was held at the Ostendorfhaus, Karlsruhe from the 25th to 26th October, 2007. The two-day course provided a general introduction to the recently released Nucleonica: the new science networking and applications portal. Nucleonica is a powerful and versatile web-based software package for the nuclear science community. With examples and exercises, a variety of core and topical issues in nuclear science and technology were presented by experts in their respective fields.

A total of twenty-nine participants, around half of them women, with a diverse range of backgrounds attended the course. There were participants from Azerbaijan, Belgium, Bulgaria, Czech Republic, Poland, Romania and Turkey. In addition there were 10 participants form the Institute for Transuranium Elements. Among them were students, academics and industry professionals from fields such as nuclear medicine, radiation protection, environmental radioactivity and reactor physics.

Final Agenda 25th Oct. 2007

How to get from the hotel to the conference training centre

Links to the presentations and exercises:

Networking with Nucleonica (J. Magill) Exercises

Nuclear Data (J. Galy) Exercises

Nuclide Charts (C. Normand) Exercises

Decay Engine (A. Berlizov) Exercises

Dosimetry & Shielding (J. Galy) Exercises

Nuclear Forensics & Illicit Trafficking (K. Mayer) Exercises

Overview of the Institute for Transuranium Elements (F. Wastin)

Advanced Nucleonica Features (J. Magill)

Training Course Feedback

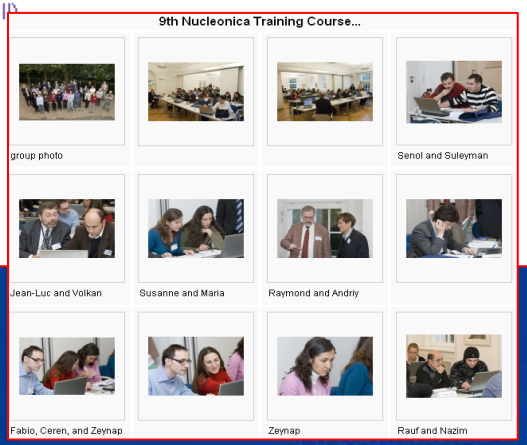
QM Questionnaire

Course Certificate

List of Participants

Gallery

Group Photo Oct. 2007, Ostendorfhaus Karlsruhe



nucleonica

Highlight: webKORIGEN

Starting with an initial reactor fuel or a target nuclide, webKORIGEN calculates the time evolution of nuclide densities changing due to decays and neutron-induced reactions in a PWR, BWR and FR and determines derived nuclear properties such as masses, activities, heat releases, etc.

nucleonica ... web driven nuclear science

Applications | My Preferences | Print | Help

webKORIGEN

Step 1: Calculation Mode | Step 2: Reactor / Operation | Step 3: Input Summary and Run | Step 4: Displ

- Reactor irradiation (Power / Flux)
- Decay
- Reactor irradiation and decay
- Reactor irradiation, cooling, reprocessing and decay

webKORIGEN

Step 1: Calculation Mode | Step 2: Reactor / Operation | Step 3: Input Summary and Run | Step 4: Display Result

Display Results at 6 y for most important nuclides

Display quantity: Activity (Bq)

Top Nuclides	Results
Cs137	1.095E+17
Ba137m	1.036E+17
Pu241	9.937E+16
Y90	7.129E+16
Sr90	7.127E+16
Cs134	3.065E+16
Pm147	2.917E+16
Eu154	9.611E+15
Rh106	9.449E+15
Ru106	9.449E+15
Kr85	7.199E+15
Cm244	6.205E+15
Pu238	5.291E+15
Ce144	3.983E+15
Pr144	3.983E+15
Sb125	3.669E+15
Eu155	2.477E+15
Am241	1.259E+15
Te125m	8.950E+14
Pu240	4.933E+14

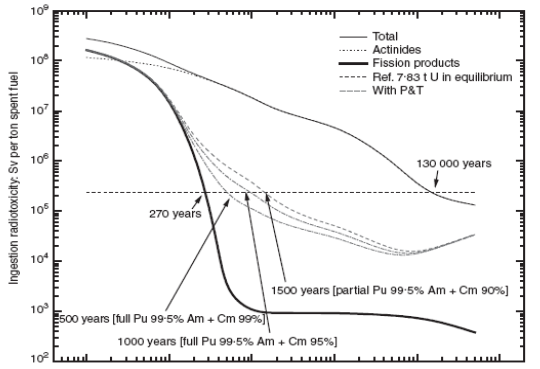
Top Elements	Results
Cesium	1.401E+17
Plutonium	1.054E+17
Barium	1.036E+17
Yttrium	7.129E+16
Strontium	7.127E+16
Promethium	2.917E+16
Europium	1.209E+16
Ruthenium	9.449E+15
Rhodium	9.449E+15
Krypton	7.199E+15
Curium	6.249E+15
Praseodymium	4.031E+15
Cerium	3.983E+15
Antimony	3.670E+15
Americium	1.313E+15
Tellurium	8.950E+14
Neptunium	4.048E+13

Totals	Results
Actinides:	1.130E+17
Fission Prod.	4.670E+17
Total	5.800E+17

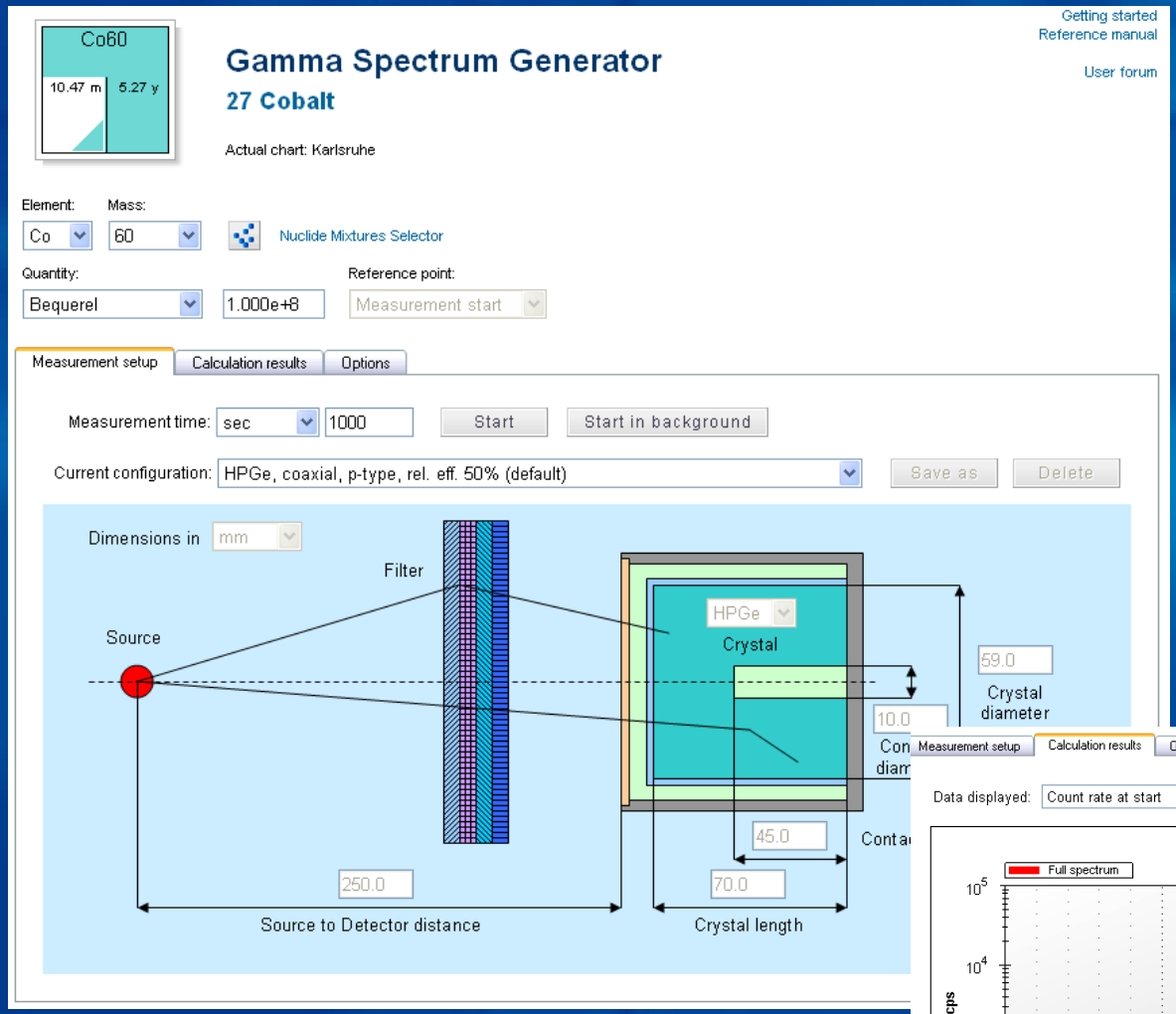
Neutron and gamma rates

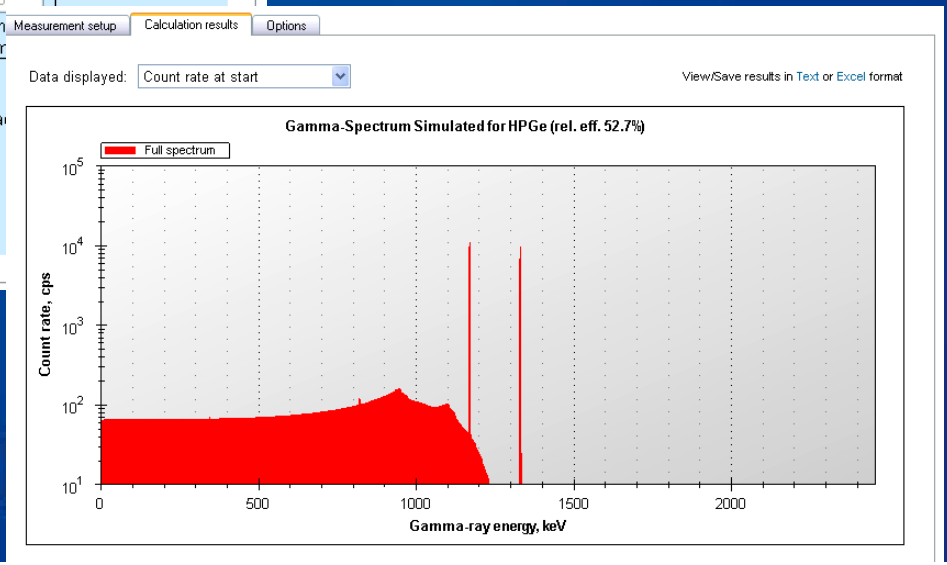
Neutron rate: 2.491E+10 n/s

Gamma rate from Actinides: 6.427E+13 MeV/s



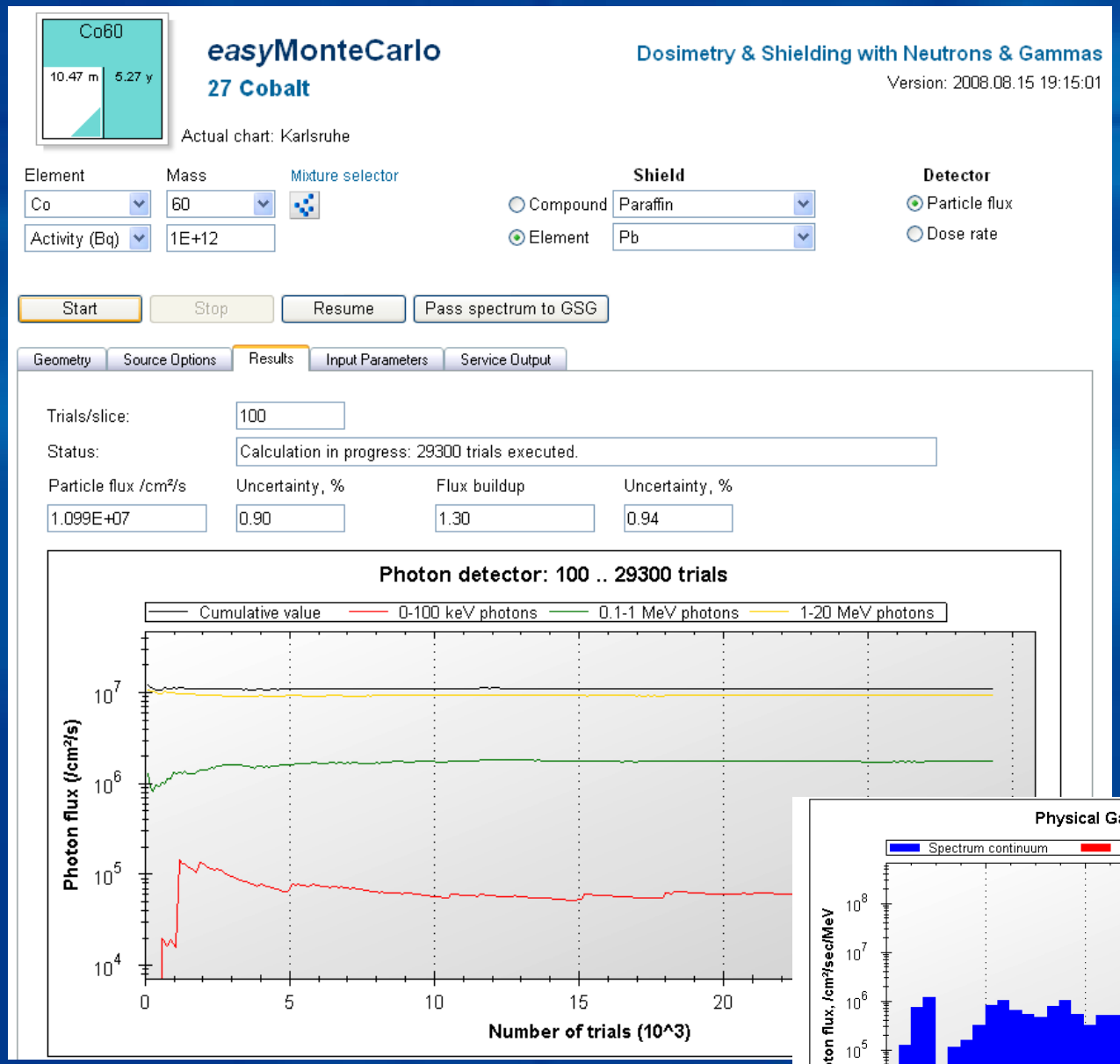
Highlight: Gamma Spectrum Generator

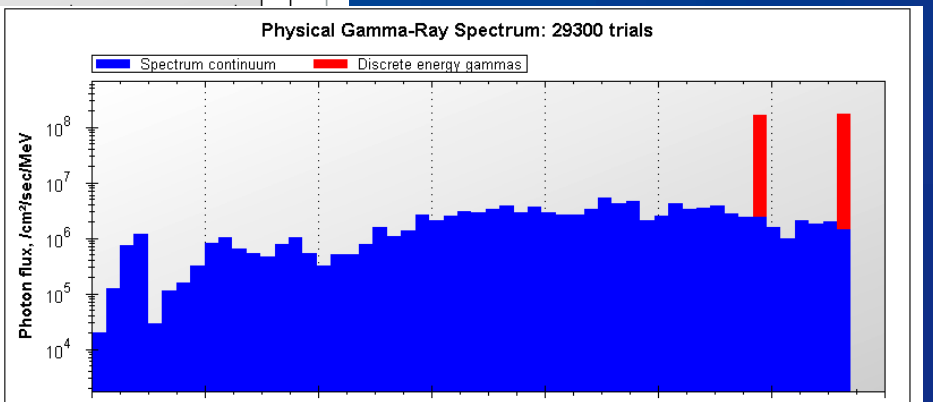




Gamma Spectrum Generator … can be used to simulate the gamma spectrum of radioactive substances with a variety of detectors (e.g. NaI, HPGe, etc.). The simulator presents an efficient visual teaching aid that is especially useful in training facilities which have restrictions on the use of radioactive substances, or when sources of special interest are not readily available.

Highlight: *easyMonteCarlo*





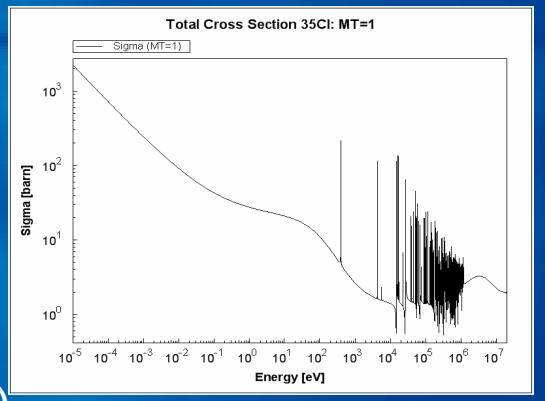
easyMonteCarlo:

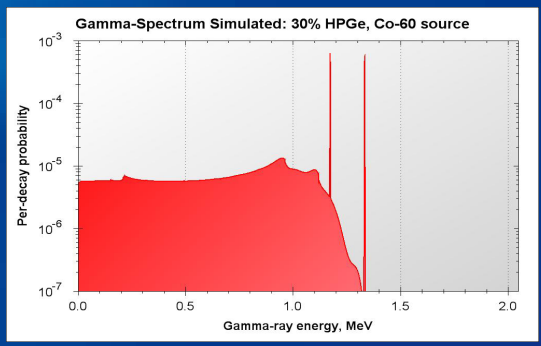
easy to use, fast, accurate dosimetry and shielding calculations for gammas and neutrons using Nucleonica's powerful Monte Carlo engine. Investigate the effects of self-attenuation in the source, build-up effects in the shield etc., on the dose rate and the particle flux distribution at the detector…

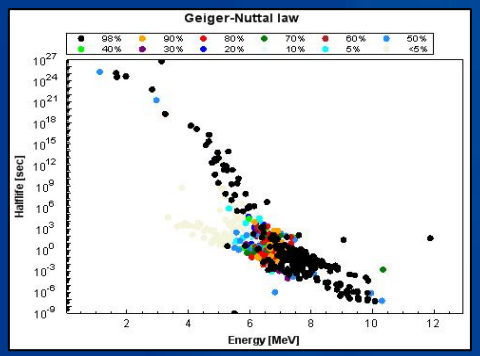
webGraphics…

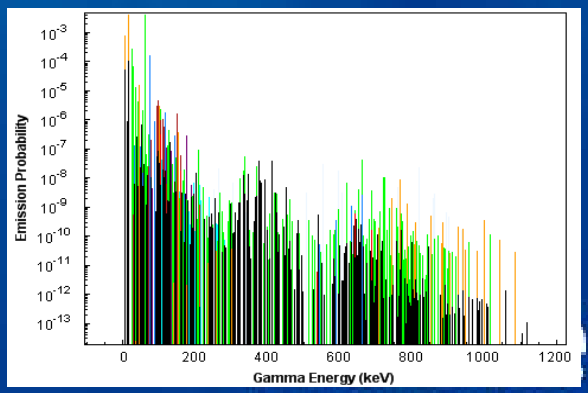
The Nucleonica webGraphics Features:

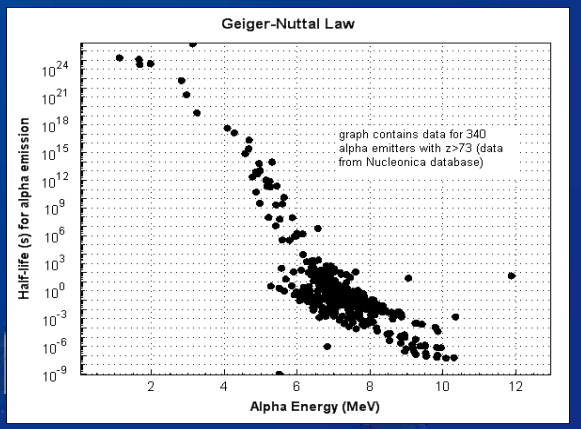
- No need to buy expensive commercial software
- Easy to use
- Delivers publication quality scientific graphs
- Variety of formats available (gif, jpg, emf, eps, png, svg)
- Graphics configuration can be stored for future use
- Available at any time from any location
- Under constant further development











Conclusions: Key Advantages of Nucleonica

- Keep informed with the latest news on nuclear issues
- Use internationally evaluated nuclear data in your work
- Extensive range of nuclear science applications
- Manage all your data in a single browser-based system and keep track of your recent activities
- Prepare a lecture or a training course with Nucleonica materials (graphics. etc.)
- Prepare publication quality scientific graphs
- Stay in contact with your colleagues from previous employment, workshops or conferences
- Meet scientists from your areas of interest and build up an international contact list and represent yourself and your Institute/Organisation in the international science community

nucleonica

Thanks!

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